



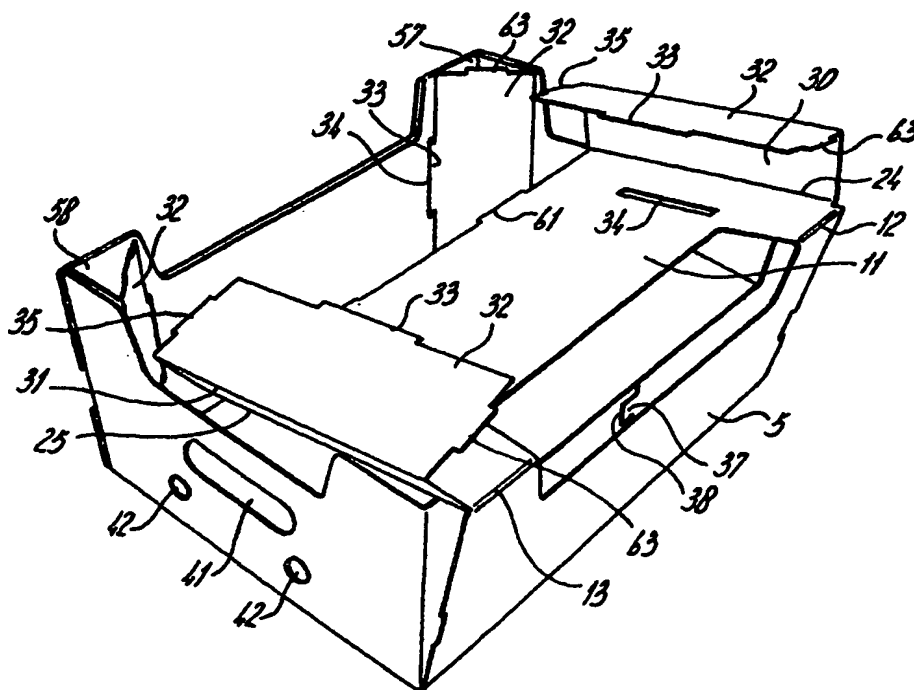
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(21) International Application Number: PCT/NL99/00614 (22) International Filing Date: 4 October 1999 (04.10.99) (30) Priority Data: 1010243 2 October 1998 (02.10.98) NL 1011621 19 March 1999 (19.03.99) NL (71) Applicant (for all designated States except US): PNC PRAGMATIC NETWORK CREATION ETS. [LI/LI]; P.O. Box 470, FL-9490 Vaduz (LI). (72) Inventors; and (75) Inventors/Applicants (for US only): CREY, Lambertus, Antonius, Joseph [NL/NL]; De Steegen 3, NL-5321 JZ Hedel (NL). FRICK, Eduard [LI/LI]; Aeelstrasse 5, FL-9490 Vaduz (LI). (74) Agent: DE BRUIJN, Leendert, C.; Nederlandsch Octrooibureau, Scheveningseweg 82, P.O. Box 29720, NL-2502 LS The Hague (NL).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report. In English translation (filed in Dutch).	

(54) Title: FLAT BLANK FOR A STACKABLE MARKET BOX

(57) Abstract

A flat blank for a box, comprising interconnecting walls and supporting feet which each extend at the position of the corners of the box from the bottom along two interconnecting walls, has a bottom panel, two first longitudinal wall panels each connecting to the bottom panel along a longitudinal fold line, two transverse wall panels each connecting to the bottom panel along a transverse fold line, two second longitudinal wall panels which are each connected by way of a longitudinal fold line to a first longitudinal wall panel, and also two pairs of auxiliary panels, in each pair the auxiliary panels being connected by way of fold lines opposite each other to a transverse wall panel, and each second longitudinal wall panel being connected by way of fold lines to opposite supporting foot panels, which first longitudinal wall panels and transverse wall panels can be taken around their fold line into an end position perpendicular to the bottom panel, which second longitudinal wall panels can be folded into a position next to and parallel to the inside of the first longitudinal wall panels situated perpendicular to the bottom panel, at the same time enclosing the auxiliary panels, and the supporting foot panels can be folded into an end position between a second longitudinal wall panel and a transverse wall panel.



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Flat blank for a stackable market box

The invention relates to the field of boxes, such as market boxes which can be stacked. To that end, such boxes have on each corner a supporting foot which is of such strength that the weight of boxes above and their contents can be transmitted without problems to the surface on which the boxes are resting.

In the case of market boxes the supporting feet can project upwards slightly in such a way that the contents, for example tomatoes, peppers and the like, are well protected against loads.

The boxes are produced from flat blanks. In this process the flat blanks are erected by folding the various panels over around previously made crease lines. A glued joint is then provided at the position of the panels which are to form the supporting feet.

The known flat blanks have the disadvantage that forming the box from them is time-consuming. The glued joint has to be produced with the necessary care, since otherwise the supporting capacity of the supporting feet is adversely affected. Problems can also be encountered when erecting the boxes on the spot. The environment where the boxes are filled with products often precludes careful handling, let alone producing the desired glued joint in a suitable manner.

The object of the invention is therefore to provide a flat blank with which a box can be formed in a simple manner, without glued joints having to be used for it. That object is achieved by means of a flat blank for a box, comprising interconnecting walls and supporting feet which each extend at the position of the corners of the box from the bottom along two interconnecting walls, which flat blank comprises a bottom panel, two first longitudinal wall panels each connecting to the bottom panel along a longitudinal fold line, two transverse wall panels each connecting to the bottom panel along a transverse fold line, two second longitudinal wall panels which are each connected by way of a longitudinal fold line to a first longitudinal wall panel, and also two pairs of auxiliary panels, in each pair the auxiliary panels being connected by way of fold lines opposite each other to a transverse wall panel, and each second longitudinal wall panel being connected by way of fold lines to opposite supporting foot panels, which first longitudinal wall panels and transverse wall panels can be taken around their fold line into an end position perpendicular to the bottom panel, which second longitudinal wall panels can be folded into a position next to and

parallel to the inside of the first longitudinal wall panels situated perpendicular to the bottom panel, at the same time enclosing the auxiliary panels, and the supporting foot panels can be folded into an end position between a second longitudinal wall panel and a transverse wall panel.

5 In the case of the flat blank according to the invention the supporting foot panels are connected to the second longitudinal wall panels. As a result of this, the position of the supporting foot panels in the finished box is fixed in such a way that no glued joint is necessary to form the supporting feet by means of these supporting foot panels.

10 According to a first variant, each supporting foot panel can comprise a first supporting-panel strip and a second supporting panel strip which is connected thereto by way of a fold line, which first supporting panel strip ultimately lies against an upward folded adjacent transverse wall panel, and which second supporting panel strip extends obliquely from said adjacent transverse wall panel to the upward folded
15 second longitudinal wall panel which is connected to said supporting foot panel.

 In this way a supporting foot with a triangular cross section can be obtained. Such a supporting foot is stable and can easily withstand pressure loads.

 The panels forming the supporting foot can be locked in the desired position in various ways. In this connection each second longitudinal wall panel preferably has a
20 recess in which the first projection of the obliquely extending second supporting panel strip can be retained.

 For further locking of the supporting foot panels each second supporting panel strip can have a second projection on its edge which will face the bottom panel, while the bottom panel can have a recess in which the second projection of the obliquely
25 extending second supporting panel strip is retained.

 According to a second variant, each supporting foot panel can have a first projection on its free edge, and the corresponding longitudinal wall panel can have a recess in which the first projection of the supporting foot panel can be retained.

 Each supporting foot panel can have a second projection on its edge which will
30 face the bottom panel, and the bottom panel can have a recess in which the second projection of the obliquely extending supporting foot panel can be retained.

 The cohesion of the box can be even further improved if each auxiliary panel from its fold line onwards has a measurement which is a maximum of half the

longitudinal measurement of the bottom panel, in such a way that two auxiliary panels can be connected at their edges facing each other in each case.

As an alternative to such connection of the auxiliary panels to each other, each of the auxiliary panels can have a recess, in which recesses the area which is at the level of a fold line can be accommodated in each case.

As already mentioned, a box can be produced very easily on the spot from the flat blank according to the invention. This means that it is not necessary to transport previously produced (generally glued) boxes. Only the flat blanks need be transported, which produces great advantages as regards transport costs and the environment (less freight transportation).

The cost of the box itself can also turn out to be much lower. Moreover, the box is easily disassembled to a small volume, while it may be possible to reuse it.

The material for the flat blank can be cardboard or a plastic such as polypropylene; it is guaranteed to be splash-resistant.

The invention will be explained in greater detail below with reference to an exemplary embodiment shown in the figures.

Figure 1 shows a first embodiment of a flat blank according to the invention.

Figure 2 shows an intermediate phase in the formation of a box from the flat blank according to Figure 1.

Figure 3 shows the finished box.

Figure 4 shows a second, already partially assembled, flat blank according to the invention.

Figure 5 shows a detail V – V of Figure 6.

Figure 6 shows the finished box.

The flat blank shown in Figure 1 comprises a bottom panel 1, to which a first longitudinal wall panel 4, 5 is connected in each case by way of longitudinal fold lines 2, 3. The transverse wall panels 8, 9 are also connected to the bottom panel 1 along the transverse fold lines 6, 7.

In addition, second longitudinal wall panels 10, 11 are provided, which second longitudinal wall panels are in turn connected by way of fold lines 12, 13 to the first longitudinal wall panels 4, 5.

On either side of the transverse wall panels 8, 9 auxiliary panels 14-17 are provided by way of fold lines 18-21. The auxiliary panels 14-17 are separated from the first longitudinal wall panels 4, 5 by means of the incisions 60.

The longitudinal wall panels 10, 11 are connected by means of fold lines 22-25 to supporting foot panels 26-29.

Each supporting foot panel 26-29 comprises a first panel strip 30, which is connected by means of fold line 22-25 to longitudinal wall panel 10, 11, and which is
5 connected by way of a fold line 31 to the second supporting panel strip 32.

Each second supporting panel strip 32 has a projection 33, while each corresponding longitudinal wall 10, 11 has a corresponding recess 34.

Moreover, each second supporting panel strip has a second projection 35, while the bottom panel 1 has a corresponding recess 36.

10 The box shown in Figures 2 and 3 is produced from this flat blank. To this end, the transverse wall panels 8, 9 are placed approximately perpendicular to the bottom panel 1 around their fold lines 6, 7. The auxiliary panels 14-17 are then folded over around their fold lines 18-21, the dovetailed projections 37 and the recesses 38 each being slotted into each other (see also Figure 2).

15 The first longitudinal wall panels 4, 5 are then folded upwards around their fold lines 2, 3, after which the second longitudinal wall panels 10, 11 are folded around their fold lines 12, 13 over the auxiliary panels 14, 15. This phase is shown in Figure 2.

20 The second longitudinal wall panels 10, 11 have projections 61, while at the position of the fold lines 2, 3 recesses 62 are provided, into which recesses said projections 61 can be hooked, as shown in Figure 3.

As shown in Figure 2, during the folding of the second longitudinal wall panels 10, 11 over the auxiliary panels 14, 15 the first and second supporting panel strips 30, 32 are folded around their respective fold lines 24, 31. In the process, the projections
25 33 of the second supporting panel strips 32 go into the recesses 34 of the second longitudinal wall panels 10, 11.

The projections 35 of the second supporting panel strips 32 also go into the recesses 36 of the bottom 1.

30 In this way the second supporting panel strips 32 are securely locked by means of their projections 33, 35, with the result that stable supporting feet 55-58 are formed, as shown in Figure 3. For these stable supporting feet 55-58 no aid other than recesses and projections has been used, so that the formation of the box has been considerably simplified.

In order to make the supporting feet 55-58 project, the first and second longitudinal wall panels 4, 5 and 10, 11 respectively are in each case connected by two pieces of fold line 12, 13 enclosing a punched-out area 39. Punched-out areas 40 are also provided in the transverse wall panels. In the finished box shown in Figure 3 these punched-out areas 39, 40 are lowered relative to the top of the supporting legs 55-58.

The top side of the second panel strips 32 can have a projection 63 in each case, said projection extending into the recess 36 of the bottom of a box above. The stack of boxes can be stabilized in this way.

10 In the variant of Figures 4-6 the supporting foot panels 26-28 are in one piece. They are connected to the longitudinal wall panels 10, 11 by way of fold line 22-25.

At their free end, the supporting leg panels 26-29 each have a projection 33, which can be accommodated in a recess 34 of the longitudinal walls 8, 9.

15 The auxiliary panels 14-17 each have a recess 70. As can be seen clearly in Figures 4-6, each of these recesses 70 accommodates in an interlocked manner the area at the level of the fold lines 12, 13 which forms the connection between the first longitudinal wall panels 4, 5 and the second longitudinal wall panels 10, 11.

This ensures that the auxiliary panels 14-17 cannot slip out. Despite the fact that the auxiliary panels 14-17 are not interconnected, a sturdy construction is still
20 obtained in this way.

The fact that the supporting foot panels 26-29 are in one piece also means a simplification of the construction.

Claims

1. Flat blank for a box, comprising interconnecting walls (51-54) and supporting feet (55-58) which each extend at the position of the corners of the box from the bottom along two interconnecting walls, which flat blank comprises a bottom panel (1), two first longitudinal wall panels (4, 5) each connecting to the bottom panel (1) along a longitudinal fold line (2, 3), two transverse wall panels (8, 9) each connecting to the bottom panel (1) along a transverse fold line (6, 7), two second longitudinal wall panels (10, 11) which are each connected by way of a longitudinal fold line (12, 13) to a first longitudinal wall panel (4, 5), and also two pairs of auxiliary panels (14-17), in each pair the auxiliary panels (14-17) being connected by way of fold lines (18-21) opposite each other to a transverse wall panel (8, 9), and each second longitudinal wall panel (10, 11) being connected by way of fold lines (22-25) to opposite supporting foot panels (26-29), which first longitudinal wall panels (4, 5) and transverse wall panels (8, 9) can be taken around their fold line (2, 3, 6, 7) into an end position perpendicular to the bottom panel (1), which second longitudinal wall panels (10, 11) can be folded into a position next to and parallel to the inside of the first longitudinal wall panels (4, 5) situated perpendicular to the bottom panel (1), at the same time enclosing the auxiliary panels (14-17), and the supporting foot panels (26-29) can be folded into an end position between a second longitudinal wall panel (10, 11) and a transverse wall panel (8, 9).

2. Flat blank according to Claim 1, in which each supporting foot panel (26-29) comprises a first supporting panel strip (30) and a second supporting panel strip (32) which is connected thereto by way of a fold line (31), which first supporting panel strip (30) ultimately lies against an upwards folded adjacent transverse wall panel (8, 9), and which second supporting panel strip (32) extends obliquely from said adjacent transverse wall panel (8, 9) to the upward folded second longitudinal wall panel (10, 11) which is connected to said supporting foot panel.

3. Flat blank according to Claim 2, in which each second supporting panel strip (32) has a first projection (33) on its free edge, and the corresponding second longitudinal wall panel (10, 11) has a recess (34) in which the first projection (33) of the obliquely extending second supporting panel strip (32) can be retained.

4. Flat blank according to Claim 2 or 3, in which each second supporting panel strip (32) has a second projection (35) on its edge which will face the bottom panel

(1), and the bottom panel (1) has a recess (36) in which the second projection (35) of the obliquely extending supporting foot panel strip (32) can be retained.

5 5. Flat blank according to Claim 1, in which each supporting foot panel (26-29) has a first projection (33) on its free edge, and the corresponding longitudinal wall panel (10, 11) has a recess (34) in which the first projection (33) of the supporting foot panel (20-29) can be retained.

10 6. Flat blank according to Claim 1 or 5, in which each supporting foot panel (26-29) has a second projection (35) on its edge which will face the bottom panel, and the bottom panel has a recess (36) in which the second projection (35) of the obliquely extending supporting foot panel (26-29) can be retained.

7. Flat blank according to one of the preceding claims, in which each auxiliary panel (14-17) from its fold line (18-21) onwards has a measurement which is a maximum of half the longitudinal measurement of the bottom panel (1).

15 8. Flat blank according to Claim 7, in which two auxiliary panels (14-17) can be connected at their edges facing each other in each case.

9. Flat blank according to Claim 10, in which the connecting parts of the auxiliary panels (14-17) comprise either a dovetailed projection (37) or a recess (38).

20 10. Flat blank according to one of the preceding claims, in which the first (4, 5) and second (10, 11) longitudinal wall panels are interconnected by two pieces of fold line (12, 13).

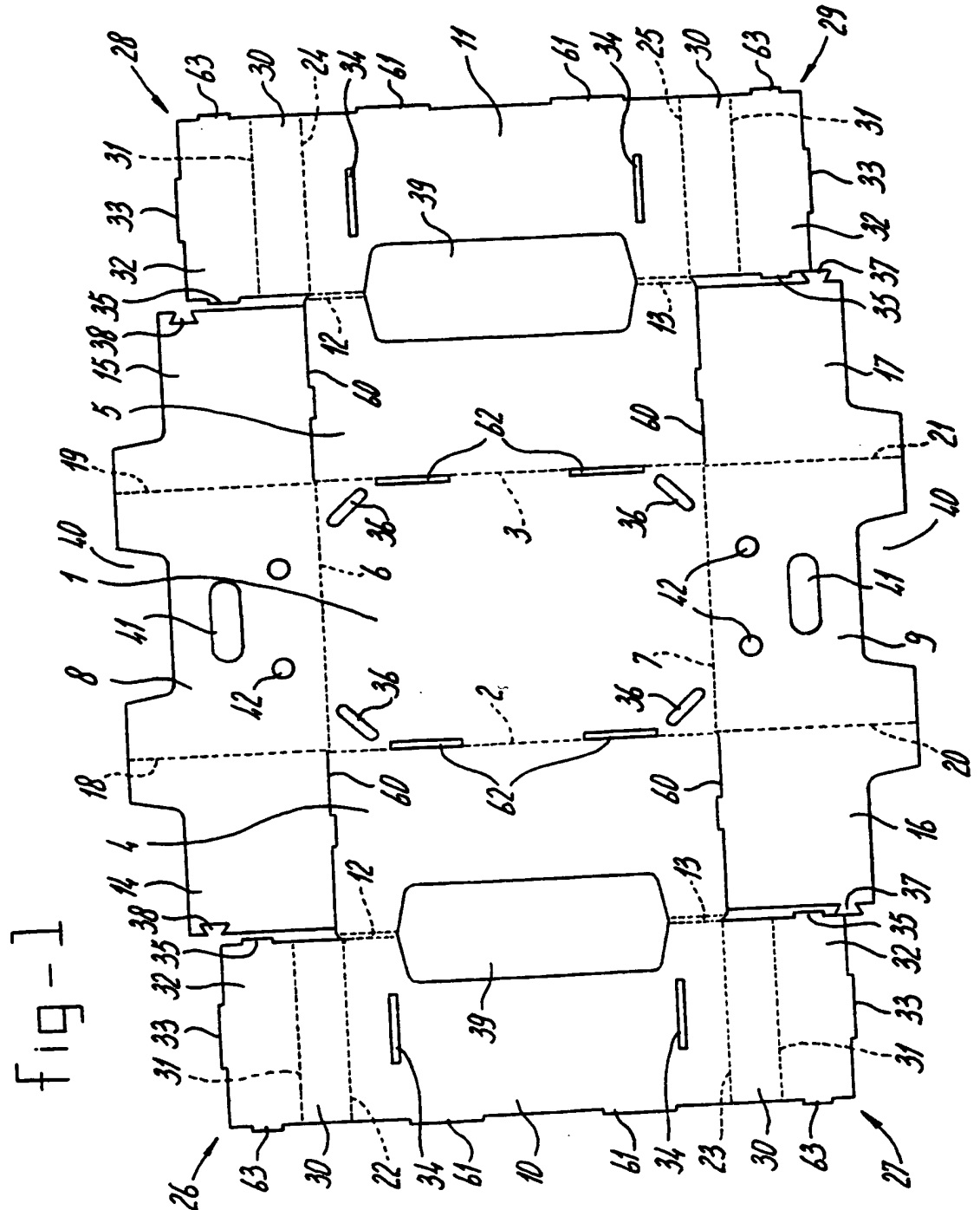
11. Flat blank according to Claim 10, in which the auxiliary panels (14-17) each have a recess (70), in which recesses (70) the area which is at the level of a fold line (12, 13) can be accommodated in each case.

25 12. Flat blank according to Claim 10 or 11, in which the first (4, 5) and second (10, 11) longitudinal wall panels enclose a punched-out area (39) which is symmetrical relative to the pieces of fold line (12, 13).

13. Flat blank according to one of the preceding claims, in which the transverse wall panels (8, 9) have a punched-out area (40) on their free edge.

30 14. Flat blank according to Claims 10-13, in which the height measurement of the supporting foot panels (26-29) is equal to the distance of the fold line (2, 3) with the bottom panel (1) from the areas of first longitudinal wall panels (4, 5) and transverse wall panels (8, 9) which are not punched out.

15. Flat blank according to one of the preceding claims, in which the transverse wall panels (8, 9) have previously punched-out areas (40, 41, 42) for forming a handle and/or vent holes.
16. Flat blank according to one of the preceding claims, in which the longitudinal fold lines (12, 13) between the first (4, 5) and the second (10, 11) longitudinal wall panels are made double, in order to provide a space between said longitudinal wall panels for accommodation of the auxiliary panels (14-17).
- 5



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fig - 2

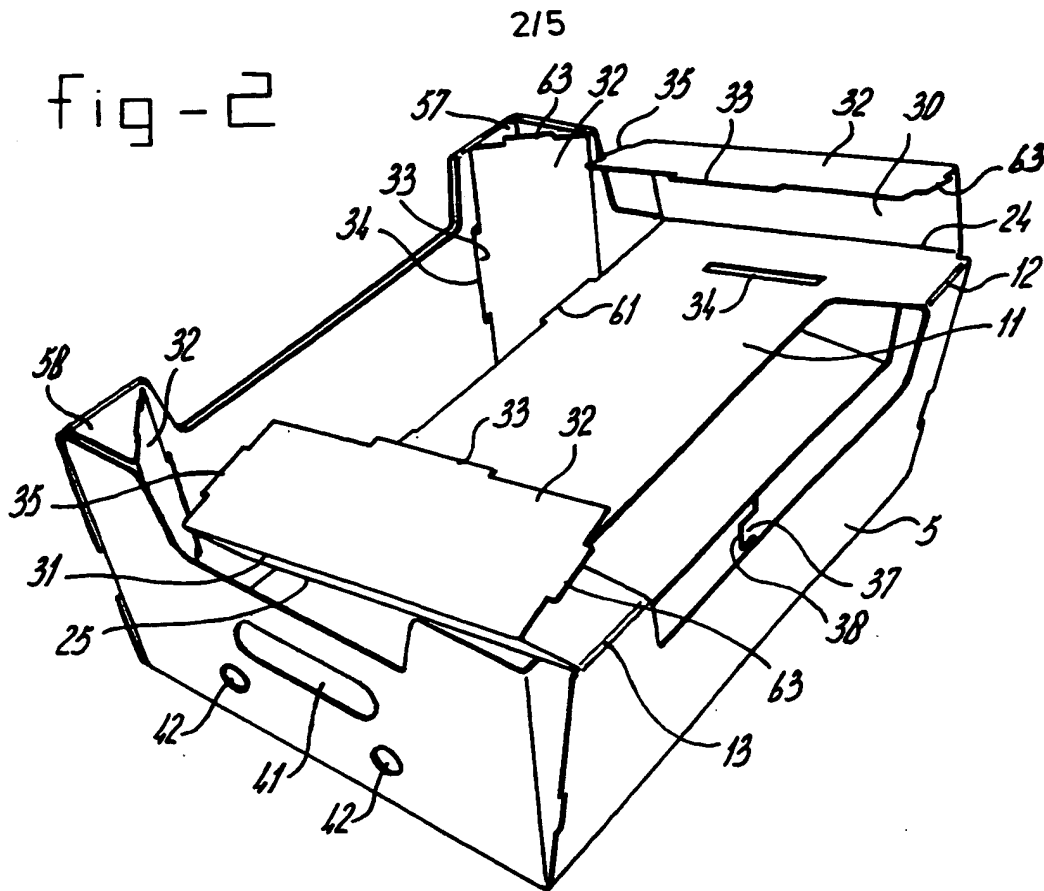
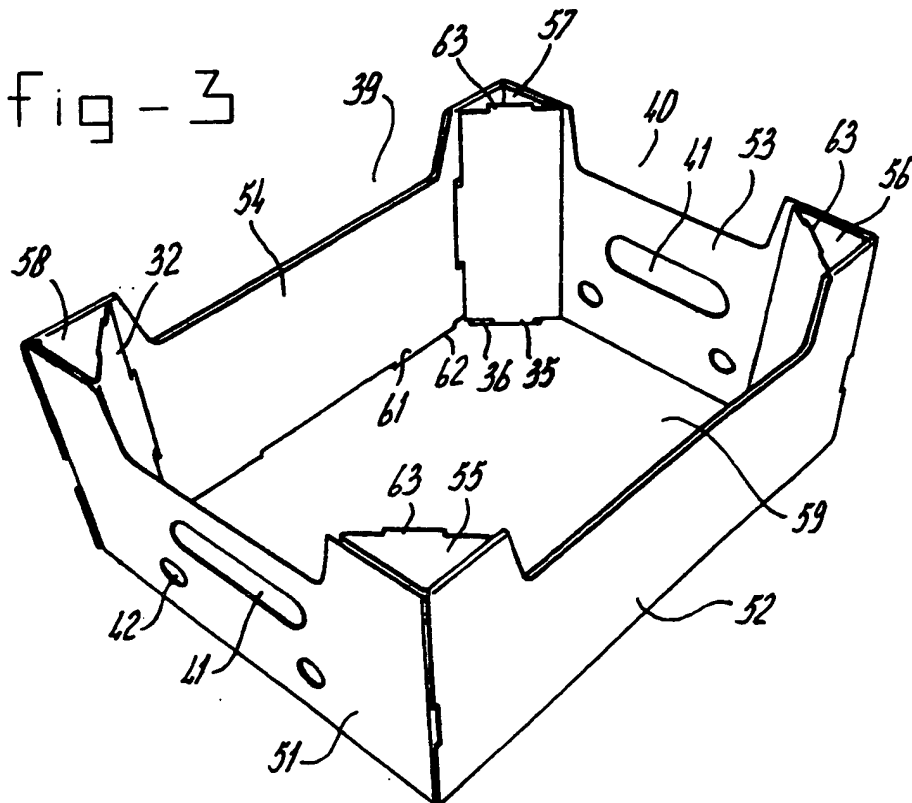


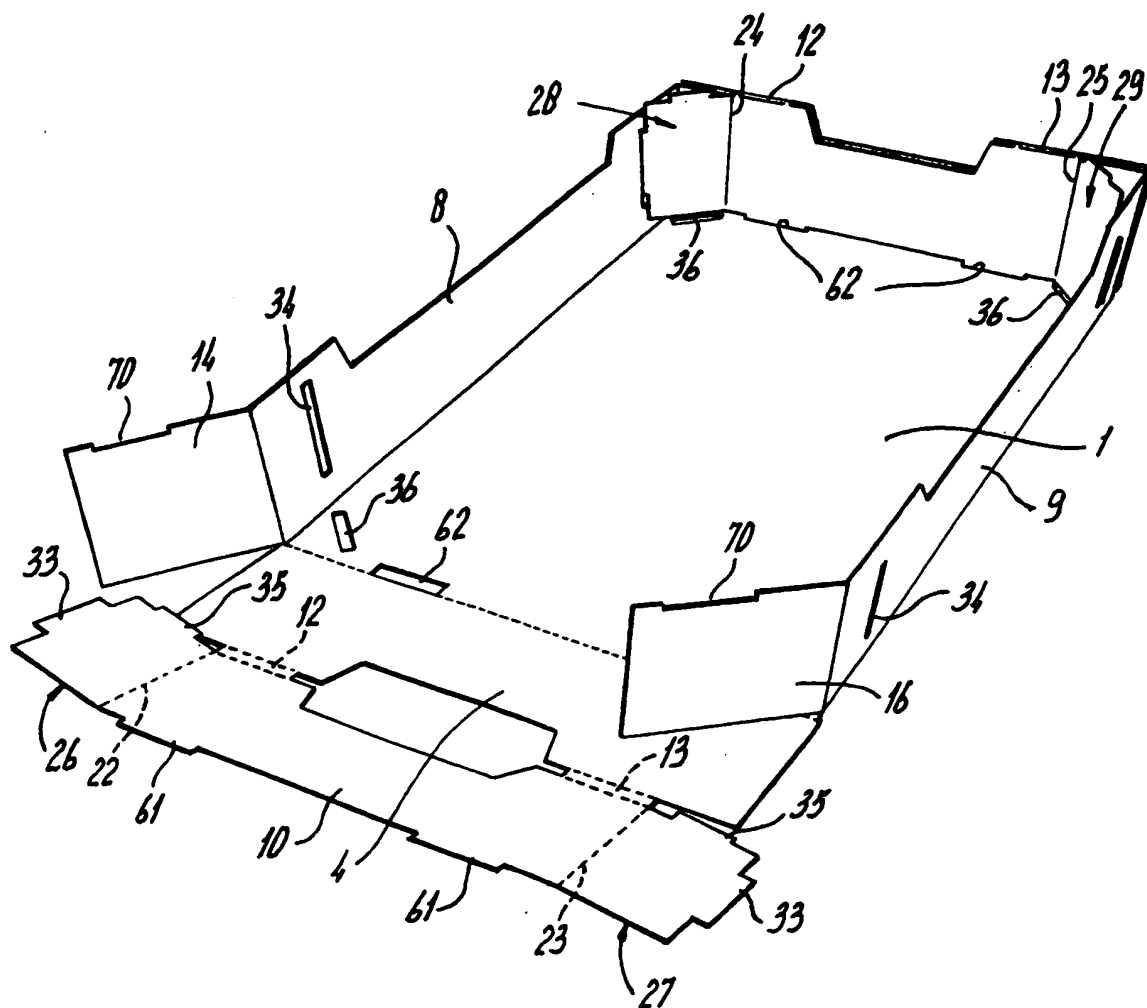
fig - 3



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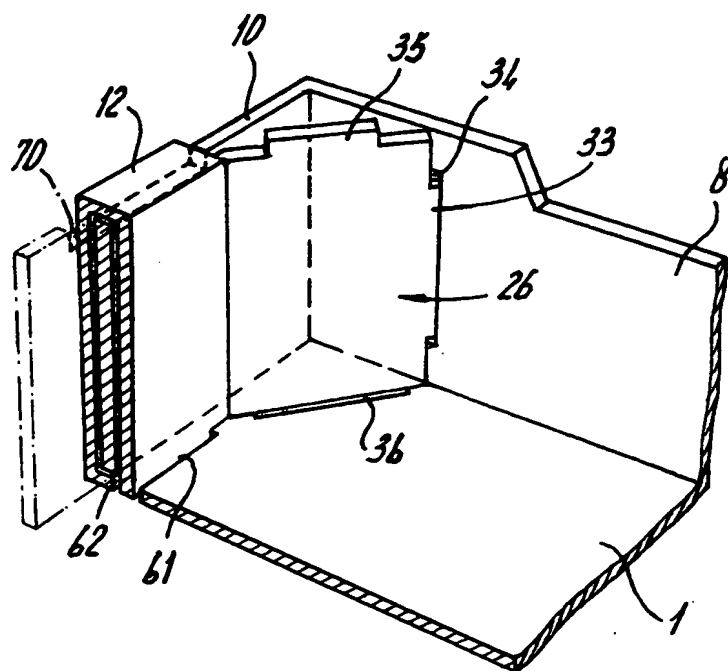
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fig-4



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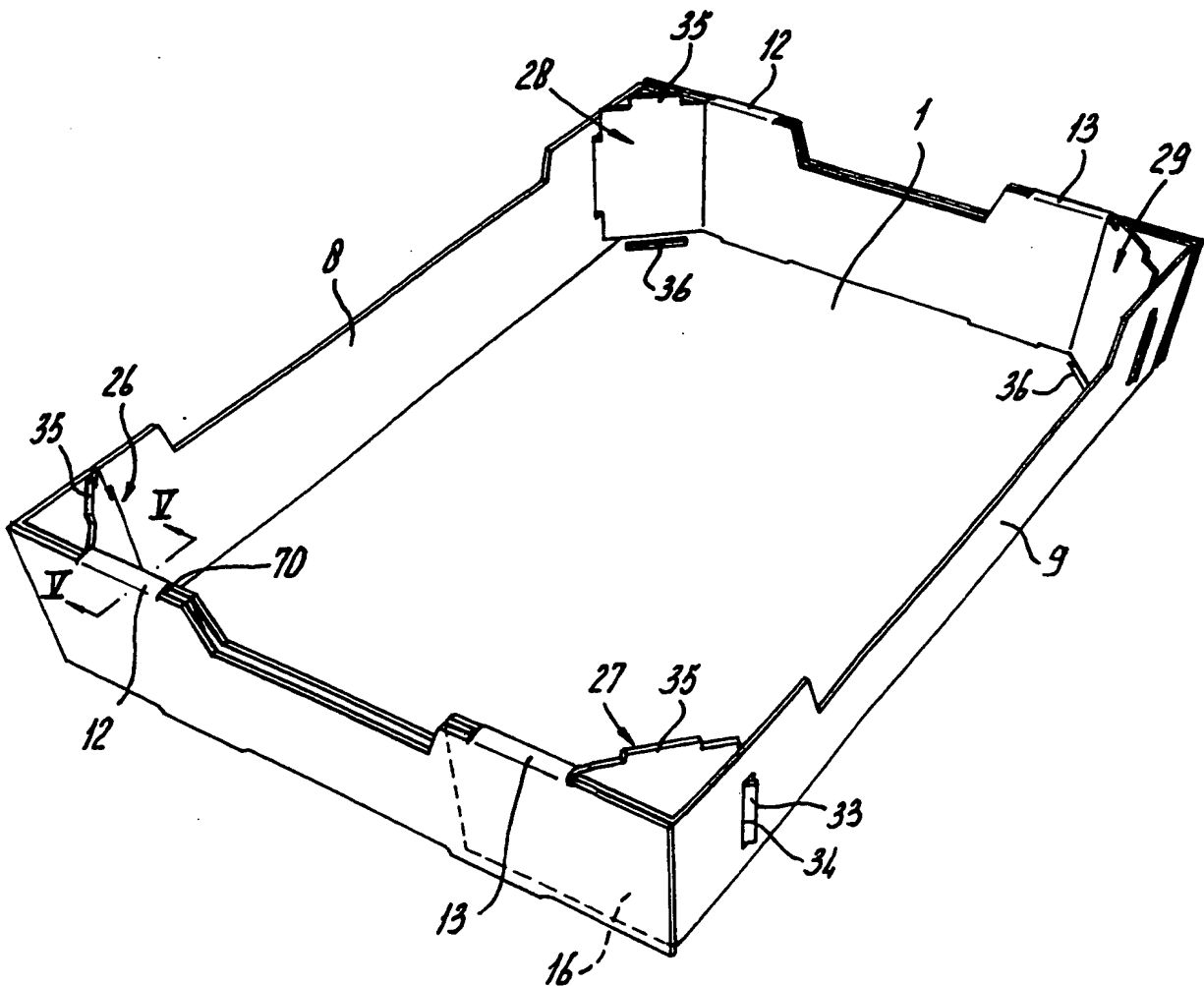
fig-5



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fig-6



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INTERNATIONAL SEARCH REPORT

Inten . Application No
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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B65D5/00 B65D5/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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☒ Further documents are listed in the continuation of box C.

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NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

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Zanghi, A

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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